

# *epi*TRENDS

A Monthly Bulletin on Epidemiology and Public Health Practice in Washington State

## West Nile Virus and Blood Donation

In early August 2008, a blood collection agency notified public health agencies in Washington of a donor infected with West Nile virus (WNV). The person is a King County resident who had traveled to eastern Washington and Oregon during her exposure period. Although she had some mild symptoms, she did not have a documented fever. For surveillance purposes she has been classified as an asymptomatic donor. This case is a reminder of the important role of blood collection agencies in surveillance for infections with West Nile virus.

## Testing for WNV at Blood Collection Agencies

West Nile virus infections were first recognized in New York State in 1999. Since then, understanding of the infection has expanded, including the range of symptoms and appropriate testing methods. Infections may be asymptomatic, may be limited to mild illness, or may progress to severe neuroinvasive disease. Viremia has been found to precede development of immunoglobulin M (IgM) and immunoglobulin G (IgG) (Figure 1, page 2).

As the disease swept across the nation, a new risk to the country's blood supply was identified. Like other viral diseases such as hepatitis B and human immunodeficiency virus, West Nile virus was found to be transmitted through blood transfusion as well as organ transplantation. Twenty-three transfusion-transmitted cases were confirmed donors before screening began in 2002.

General safeguards preventing ill persons from donating blood have been established. These included prohibiting persons with consistent symptoms from donating blood and encouraging donors to call their blood bank if they developed an illness after donating. These safeguards alone cannot prevent blood carrying West Nile virus from entering the blood supply because of two factors. First, persons infected with West Nile virus become viremic (virus in the blood) a few days before the onset of symptoms (Figure 1, page 2) and might fail to report an illness occurring after donation. In addition, approximately 80% of persons infected with West Nile virus never develop any symptoms and are unaware of their infection.

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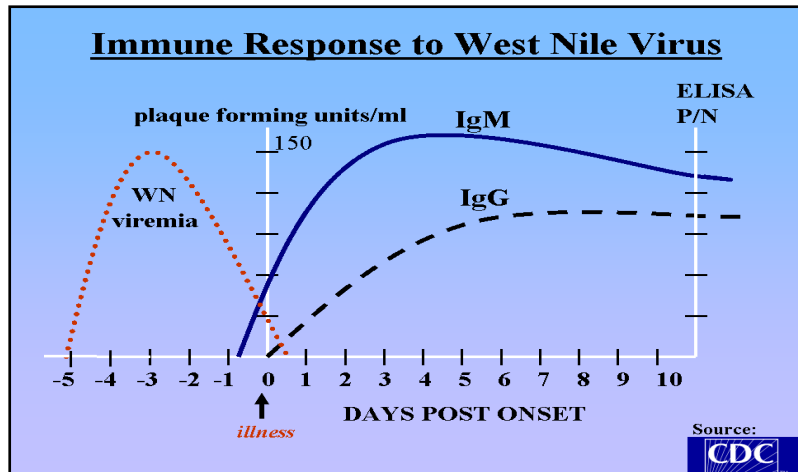
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**Figure 1. Human Immune Response to West Nile Virus**  
Source: CDC



In response to this new risk to the blood supply, blood collection agencies began testing donated blood for the virus in June 2003. The test used by blood banks is a nucleic acid amplification test (NAAT). Although nucleic acid detection is a poor test for diagnosing symptomatic West Nile virus disease because the viral level disappears just as symptoms begin, it is an ideal test for detecting West Nile viremia in donated blood.

Once contaminated blood is identified by NAAT, it is quarantined and not used for transfusion. Nationally this screening was performed on approximately 6 million units during June - December 2003, resulting in the removal of at least 818 viremic blood donations from the blood supply (MMWR 2004; 53)

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## **Viremic Donor Surveillance**

Not only does testing donations help safeguard the blood supply, it also adds to surveillance for human West Nile virus infections (Figure 2, page 3). Since a large majority of infections are asymptomatic, screening blood provides an additional way to identify West Nile virus infections in humans.

In Washington, the reporting of a viremic donor differs somewhat from the way most other communicable notifiable conditions are reported. Blood collection agencies report persons whose blood screens positive for West Nile virus to the Department of Health Communicable Disease Epidemiology Section which in turn notifies the local health jurisdiction where the donor resides.

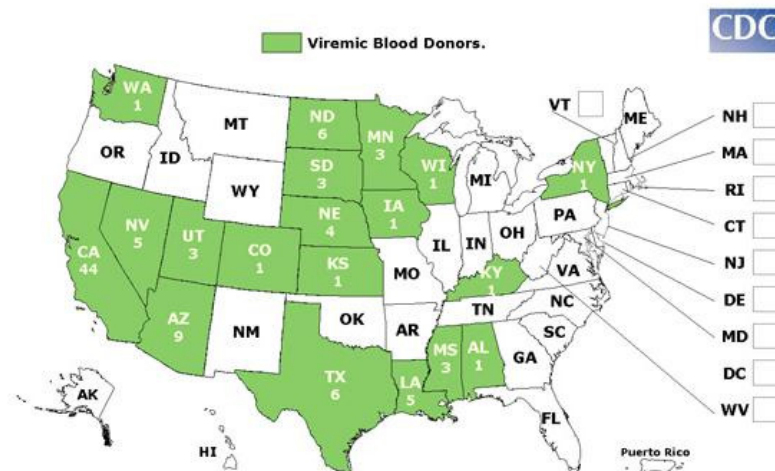
When a case is reported, the local public health jurisdiction should initiate an investigation using the West Nile Virus Case Report Form:

<http://www.doh.wa.gov/notify/forms/wnv.pdf>. The interview asks a donor about symptoms of illness and pertinent travel history. The local health jurisdiction should also assist in obtaining a serum sample drawn 10-14 days after the date of the donation to test for IgM and confirm the diagnosis.

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**Figure 2: 2008 West Nile Virus Viremic Blood Donor Activity in the United States**

(Reported to CDC as of September 16, 2008)  
Source: CDC



## WNV Prevention

Preventing West Nile virus infection is particularly important for older persons who are more likely to develop severe neurological symptoms. Prevention measures include:

1. Reduce exposure to mosquitoes.
  - Make sure windows and doors are "bug tight." Repair or replace damaged screens.
  - If possible stay indoors at dawn and dusk, when mosquitoes are the most active.
  - Wear a long sleeve shirt, long pants, and a hat when going into mosquito-infested areas, such as wetlands or woods.
  - Use mosquito repellent when necessary. The most effective mosquito repellents contain the EPA approved active ingredients DEET (N, N-diethyl-m-toluamide), Picaridin, oil of lemon eucalyptus, or IR3535. Read and follow instructions on the label. Permethrin is another long-lasting repellent that is intended for application to clothing and gear, but not directly to skin. In general, the more active ingredient (higher concentration) a repellent contains, the longer time it protects against mosquito bites. Do not over use repellents. Take special care when using repellent on children.
  - Additional information regarding the use of mosquito repellents can be found on the CDC website at: [http://www.cdc.gov/ncidod/dvbid/westnile/qa/insect\\_repellent.htm](http://www.cdc.gov/ncidod/dvbid/westnile/qa/insect_repellent.htm) and <http://www.cdc.gov/ncidod/dvbid/westnile/RepellentUpdates.htm>
2. Reduce the number of mosquito breeding sites outdoors by preventing sources of standing water.
  - Empty anything that holds standing water — old tires, buckets, plastic covers, and toys.
  - Change water in your birdbaths, fountains, wading pools and animal troughs at least twice weekly.
  - Recycle unused containers that may collect water — bottles, cans, and buckets.
  - Make sure roof gutters drain properly and clean clogged gutters in the spring and fall.
  - Fix leaky outdoor faucets and sprinklers.